

We claim:

1. A capillary electrophoresis chip apparatus for detecting nucleotide polymorphism or single nucleotide polymorphism, said apparatus comprising an electrophoresis chip comprising an upper channel layer, wherein the upper layer comprises a microfluid channel and an electrode aperture structure for loading sample; a middle electrode layer for sealing the microfluid channel to form an intact capillary and providing the needed voltage for the electrophoresis chip; and a lower heating layer for providing a stable temperature gradient for electrophoresis, wherein the upper layer, the middle layer, and the lower layer are thermal conductive and adhesive to each other.
2. A capillary electrophoresis chip apparatus for detecting nucleotide polymorphism or single nucleotide polymorphism according to claim 1, wherein the microfluid channel is one dimensional, two dimensional, or multiple dimensional fluid channel.
3. A capillary electrophoresis chip apparatus for detecting nucleotide polymorphism or single nucleotide polymorphism according to claim 1, wherein the sectional width or diameter of the microfluid channel is between 5 to 200  $\mu\text{m}$ ; wherein the depth of the fluid channel is between 5 to 200  $\mu\text{m}$ ; and wherein the length of the electrophoresis channel is between 1 to 30 cm.
4. A capillary electrophoresis chip apparatus for detecting nucleotide polymorphism or single nucleotide polymorphism according to claim 1, wherein the material for making the middle electrode layer is gold, platinum, or graphite.
5. A capillary electrophoresis chip apparatus for detecting nucleotide polymorphism or single nucleotide polymorphism according to claim 1, wherein the middle electrode layer is coated with a layer of polydimethylsiloxane (PDMS).
6. A capillary electrophoresis chip apparatus for detecting nucleotide polymorphism or single nucleotide polymorphism according to claim 1, wherein the heating layer comprise two or more sets of temperature control elements that are spaced apart,

wherein each temperature control element is kept at a different constant temperature so as to form a spatial temperature gradient.

7. A capillary electrophoresis chip apparatus for detecting nucleotide polymorphism or single nucleotide polymorphism according to claim 1, wherein the stable temperature gradient is a temporal temperature gradient established by gradually and uniformly heating the whole chip.